is 30' 7" in diameter. Phosphoric acid is added at the rate of 1.3 gal. (63% H_3PO_4) per 100 lb. of phenol. The aeration tank temperature is maintained at 27-33°C. with steam. Labor requirements are 6 hours per day for operation, 3 hours per day for laboratory analyses, and 1 hour per day for maintenance.

It seems probable that the major difference between these two plants lies in the aeration capacity; the design phenol loads are, in fact, in close proportion to the abilities of the aerators to supply oxygen. The other major differences is in the minimum ammonia concentration taken as acceptable.

The Bethlehem and Dominion treatment plants utilize the activated sludge principle. When space is available, similar biological oxidation can be accomplished in lagoons. The Granite City Steel Company, Granite City, Illinois, has been utilizing a large lagoon for treating such wastewaters for many years. Space requirements can be reduced through the use of aerated lagoons, as opposed to the non-aerated lagoon used at Granite City.

Incineration

Distillation and incineration is to be used at the Conshohocken, Pennsylvania plant of the Alan Wood Steel Company to dispose of the coke plant wastewaters. The wastewaters will be concentrated by distillation and the residue incinerated with coke oven gas. This plant has 151 ovens and is thus about 30% the size of the Fairfield plant.

Armco Steel Corporation proposed to incinerate the coke plant wastewaters at its Houston plant as an alternative to deepwell disposal. This 62-oven plant is, of course, very small in comparison with the Fairfield plant.

of 300 gpm from a biological oxidation process containing 0.5 ppm phenol, an ozone generator delivering 190 lbs. per day reduced phenol to less than 3 ppb. Two such generators (Welsbach G-204 Ozonators) would accomplish the same results with a 1mgd flow rate and would reportedly cost $70,000.

Adsorption

Activated carbon can be used to remove phenol from dephenolized wastes, requiring initially 10 lbs. of carbon per pound of phenol removed; a 98 percent reduction has been reported. Since reactivation of the carbon results in some loss, the carbon requirements may be as high as one pound per pound of phenol removed. The maximum carbon requirement for 1 mgd of dephenolized wastewater would thus be:

1,000,000 gals/day x 8.34#/gal. x 160#/million = 1,334#/day

More recent work indicates a 5 percent loss of carbon on regeneration; using the higher figure, carbon at 28¢ per lb. would cost a maximum of $374 per day. A carbon adsorption unit for 1 mgd would cost between $350,000 and $600,000.

As a tertiary treatment following activated sludge with or without chemical treatment, carbon could be added on sand filters as is done in water treatment plants. Sand filters for 1mgd would cost about $60,000. If 1 ppm of phenol remained to be removed, the carbon requirement would be about 83 lbs. per day on the basis of the above data for powdered activated carbon at 13¢ per lb. If the required dosage were as high as required for the tertiary treatment of municipal sewage, i.e., 1 lb. per 1000 gal. with no regeneration, the cost would be only $130 per day.